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INTRODUCTION TO MITIGATION
INDEPENDENT STUDY COURSE



Federal Emergency Management Agency
National Emergency Training Center
Emergency Management Institute

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FOREWORD

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (P.L. 100-707) requires and encourages planning and implementation of mitigation activities in an effort to reduce the escalating costs of disasters. The Federal Emergency Management Agency (FEMA) is responsible for implementing the provisions of the Act. That responsibility includes providing training opportunities for all those who have responsibility for or interest in mitigation.

FEMA's training program covers all aspects of emergency management. Its two schools, the National Fire Academy (NFA) and the Emergency Management Institute (EMI), are located on a single campus in Emmitsburg, Maryland. Both the NFA and the EMI offer courses, workshops, and seminars on the main campus, and across the United States through funding of State training programs.

Independent Study Program

The Independent Study Program is another delivery mechanism through which FEMA provides expanded opportunities for emergency management training. The program is administered through the EMI, and consists of a series of self-paced courses. Several of the courses, including this one, are designed for people who have responsibilities for emergency management and for the general public. Other "audience-specific" courses are available only for audiences in emergency management disciplines.

The following courses are available to emergency management personnel and to the general public.

- IS-1:Emergency Program Manager: An Orientation to the Position
- IS-2:Emergency Preparedness, USA
- IS-3:Radiological Emergency Management
- IS-5:Hazardous Materials: A Citizen's Orientation
- IS-7:A Citizen's Guide to Disaster Assistance

The following courses are audience-specific.

- IS-8:Building for the Earthquakes of Tomorrow: Complying With Executive Order 12699
- IS-120: An Orientation to Community Disaster Exercises
- IS-275: The Emergency Operations Center's Role in Community Preparedness, Response and Recovery Operations
- IS-279: Retro-fitting Flood-Prone Structures
- IS-301:Radiological Emergency Response
- IS-330:Refresher Course for Radiological Monitors
- IS-336: Refresher Course for Radiological Response Teams.

Individual and group enrollments are available for all courses. There is no charge for enrollment. Individuals should submit an application form (FEMA Form L-173) to:

**FEMA Independent Study Program
Emergency Management Institute
16825 South Seton Avenue
Emmitsburg, Maryland 21727**

Requests for group enrollment (five or more participants) may be made by letter or on FEMA Form 21, Application for Group Enrollment, to the same address.

Enrollment in FEMA independent study courses may be accomplished electronically via the FEMA Home Page at <http://www.fema.gov>. Independent study courses open to the general public may also be completed on-line through the same internet address.

One semester hour of college credit may be obtained for each successfully completed course. For information regarding application for academic credit and fees, contact the Independent Study Office at EMI at 1-800-238-3358.

COURSE REFERENCES

The following publications were used in the development of this course and will serve as useful mitigation references.

- American Red Cross, *Preparing Your Home for a Hurricane*, 1995.
- Barbee, Daniel and Clancy Philipsborn, *Multi-Objective Decision-Making for Local Officials*, 1988.
- Central United States Earthquake Consortium, *Disaster Resistant Communities, Final Report on the Evansville-Henderson Workshop to Develop a Model Disaster Resistant Community Program*, April 1997.
- Federal Emergency Management Agency, *44 CFR Part 206: Disaster Assistance: Hazard Mitigation Planning and Hazard Mitigation Grant Programs*, August 1990.
- Federal Emergency Management Agency, *Community Rating System Coordinators Manual*, July 1994.
- Federal Emergency Management Agency, *Disaster Assistance: A Guide to Recovery Programs*, November 1995.
- Federal Emergency Management Agency, *Emergency Planning Workshop*, June 1997.
- Federal Emergency Management Agency, *A Focus Group on Attitudes Toward Mitigation Among Homeowners, Small Businesses and Community Leaders*, November 1996.
- Federal Emergency Management Agency, *Guide for All-Hazard Emergency Operations Planning*, SLG-101.
- Federal Emergency Management Agency, *Local Hazard Mitigation Coordinator Front End Analysis, Final Project Report*, March 1993.
- Federal Emergency Management Agency, *Mitigation Program Development Guide*, FEMA-122, March 1987.
- Federal Emergency Management Agency, *Multi Hazard Identification and Risk Assessment, the Cornerstone of the National Mitigation Strategy*, 1997.
- Federal Emergency Management Agency, *National Mitigation Strategy*, 1995.
- Federal Emergency Management Agency, *Post Disaster Hazard Mitigation Planning for State and Local Governments*, DAP-12, September Federal Emergency Management Agency, *Post Federal Emergency Management Agency, Project Impact Guidebook*, 1997.
- Federal Emergency Management Agency, *Protecting Floodplain Resources*, 1996.
- Federal Emergency Management Agency, *Report on Costs and Benefits of Natural Hazard Mitigation*, March 1997.
- Federal Emergency Management Agency, *Robert T. Stafford Disaster Relief and Emergency Assistance Act and Miscellaneous Directives of PL 100-707*.
- Federal Emergency Management Agency, Disaster Field Training Organization, *Hazard Mitigation Programs, Draft*, January 1997.
- Federal Emergency Management Agency, Disaster Field Training Organization, *Mitigation Overview, Draft*, January 1997.

- Federal Emergency Management Agency, Disaster Field Training Organization, *NFIP Overview, Draft*, January 1997.
- Haimes, Yacov, “Risk Management and Natural Hazard Protection”, *Natural Hazards Observer*, Volume XX, Number 3, January 1996. (Reprints available).
- Massachusetts Department of Environmental Management, Flood Hazard Management Program, *Flood Hazard Mitigation Planning: A Community Guide*, June 1997.
- Topping, Ken, “Mitigation From the Ground Up”, *Natural Hazards Observer*, Volume XX, Number 6, July 1996. (Reprints available).
- Uba, Gerald, “Natural Hazard Mitigation Planning for a Disaster-Resistant Community”, *Natural Hazards Observer*, Volume XXI, Number 4, March 1997. (Reprints available).
- U.S. General Services Administration, *Catalog of Federal Domestic Assistance*, 1997.
- Wetmore, French, and Associates, *Mitigation Measures*, June 1996.

INTRODUCTION

As the costs of disasters continue to rise, governments and ordinary citizens must find ways to reduce hazard risks to our communities and ourselves. Efforts made to reduce hazard risks are easily made compatible with other community goals; safer communities are more attractive to employers as well as residents. As communities plan for new development and improvements to existing infrastructure, mitigation can and should be an important component of the planning effort. This means taking action to reduce or eliminate long-term risk from hazards and their effects.

For many, mitigation is a relatively new concept. FEMA has produced a series of courses intended to train those who have responsibility for or simply interest in mitigation planning and project implementation. This course provides an introduction for those who are new to emergency management and/or mitigation. It is also a prerequisite for a non-resident Applied Practices Series course called *Mitigation for Emergency Managers*. For additional information on *Mitigation for Emergency Managers*, contact the training officer at your State's emergency management agency.

This course should be completed at a comfortable pace. Upon completing all four units, reading the appendices and completing the activities and exam, learners should be able to:

- Explain the rationale for mitigation and its function as a component of emergency management.
- Define the principles, purposes, and priorities of mitigation.
- Describe mitigation measures that are applicable to local hazard risk problems.
- Summarize responsibilities and resources for mitigation.
- Outline mitigation planning considerations.

Course Overview

Introduction to Mitigation has four units, which are outlined below.

Unit One: The Case for Mitigation

This unit will describe WHY mitigation is so important in both emergency management and in community planning and development. It compares recent and historical costs of disasters from a national perspective, and introduces the National Mitigation Strategy developed by FEMA to guide and encourage mitigation efforts nationally. The identification of community hazards risks through hazard analysis is introduced. A methodology for identifying and analyzing hazards is provided, as is the opportunity to practice hazard analysis using local information.

Unit Two: Mitigation Strategies

Unit Two addresses WHAT the community can do about the hazard risks it has identified. The development of a local mitigation strategy requires some knowledge about the various mitigation measures that have been successful in communities around the nation. For ease of discussion, mitigation measures are categorized into six types: prevention, property protection, natural

resources protection, emergency services, structural projects, and public information. Several measures may be available to solve an existing problem; the unit also provides a list of criteria for deciding what approach is best for the community.

Unit Three: Responsibilities and Resources for Mitigation

Once the community has a strategy for reducing hazard risks, it must figure out HOW to accomplish it. Unit Three focuses on the resources available within the community for implementing mitigation, and on assistance available from outside organizations. Case studies of local mitigation projects are included as examples of how some communities implemented their strategies. Lists of Federal and State programs with mitigation components are also included.

Unit Four: Building A Mitigation Program

Having discussed important components of a mitigation program in the first three units, Unit Four takes a broader look at establishing mitigation as an ongoing community concern through the development of a mitigation plan. The process posed in this unit establishes a constituency for mitigation in the form of a community planning team that includes representatives from government, business, volunteer and other organizations, and individual citizens. It provides a series of checklists that can be used to develop or evaluate the mitigation program in your community.

HOW TO COMPLETE THE COURSE

You will remember the material best if you do not rush through it. Often there is white space next to the text where you can make notes. The more you **interact** with the material, the better you will remember it.

A **pretest** is included for your use in evaluating your current knowledge of mitigation. The questions are either “true-false” or multiple choice. Answer the pretest questions without looking ahead to the course materials. An answer key is provided so you can pay special attention to discussions in the text about missed questions.

Each of the four **units of instruction** follows a similar format. At the end of the descriptive portion of each unit a summary will be included. The summary briefly reviews the main points of the unit. Following the summary, each unit includes a section called Mitigating Your Hazards. This section consists of a series of questions that deal with hazards, disasters and mitigation in your own jurisdiction. Answering these questions will help you to relate the course material to your own circumstances to make the material more meaningful. This process will help you retain the knowledge you gain.

Take a break at the end of each unit and give yourself time to think about it. Then go back and take the quiz at the end of the unit, reviewing the material if you missed any questions.

A **quiz** section called *Checking Your Memory* follows each unit. This section includes 5 to 10 true-false and multiple-choice questions that check accomplishment of unit objectives. An answer key is provided for each unit quiz.

A **glossary** is located after the final unit. It contains definitions of terms related to mitigation. Use the glossary as you complete the units of instruction. It may be a useful resource later.

The **Additional Mitigation Resources** section lists organizations that provide mitigation information and referral.

Answers to the Pretest and Checking Your Memory includes the correct responses to those sections.

The **Final Exam** tests knowledge gained from the course. The exam consists of 50 multiple-choice and true-false questions. An answer sheet is supplied with the course materials, along with mailing instructions for having the exam graded and the certificate awarded.

PRETEST

(Answers on page A-1)

- 1) Mitigation is needed to reduce
 - a) loss of life and property damage from hazard events.
 - b) interruption of business caused by hazard events.
 - c) interruption of public services caused by hazard events.
 - d) All of the above.
- 2) A Disaster Resistant Community
 - a) does not have any natural hazards.
 - b) promotes measures to reduce hazard risk.
 - c) has eliminated all of its hazards.
- 3) The Federal Emergency Management Agency's National Mitigation Strategy
 - a) encourages a partnership between the public and private sectors for ensuring safer communities.
 - b) lists community mitigation requirements.
 - c) provides technical mitigation information.
- 4) Ensuring people are ready for a disaster and able to respond effectively is
 - a) mitigation.
 - b) preparedness.
 - c) response.
 - d) recovery.
- 5) Rebuilding after a disaster is
 - a) mitigation.
 - b) preparedness.
 - c) response.
 - d) recovery.
- 6) Search and rescue, mass care, debris removal and access control are functions carried out during
 - a) mitigation.
 - b) preparedness.
 - c) response.
 - d) recovery.

- 7) Sustained actions to reduce or eliminate long-term risk to people and property from hazards and their effects is
 - a) mitigation.
 - b) preparedness.
 - c) response.
 - d) recovery.
- 8) Hazard analysis determines
 - a) when the next disaster will occur.
 - b) how well the community will respond to a disaster.
 - c) how hazards are likely to affect the community.
 - d) All of the above.
- 9) A hazard analysis focuses on
 - a) all hazards.
 - b) natural hazards.
 - c) technological hazards.
 - d) civil emergencies.
- 10) _____ is the predicted impact that a hazard would have on people, services, specific facilities and structures in the community.
 - a) Occurrence
 - b) Risk
 - c) Hazard identification
- 11) Using hazard areas for open space and recreational use is a mitigation strategy.
 - a) True.
 - b) False.
- 12) If a mitigation strategy causes disproportional hardship to a segment of the population
 - a) the affected population will have to “tough it out”.
 - b) the strategy is unlikely to be successful, and may violate environmental justice regulations.
 - c) the affected population will become supporters of future mitigation efforts.
- 13) Structures damaged in a natural disaster should
 - a) never be rebuilt.
 - b) be rebuilt to pre-disaster quality.
 - c) be rebuilt to the most recent hazard-resistant standards.

- 14) _____ has the primary responsibility for mitigation.
- a) Federal government
 - b) State government
 - c) Local government
- 15) Adopting and enforcing building codes and zoning ordinances that reduce hazard risk is the responsibility of
- a) Federal government.
 - b) State government.
 - c) local government.
- 16) Businesses
- a) may be willing to contribute time, labor, materials or other support to mitigation efforts.
 - b) do not gain anything from mitigation initiatives.
 - c) are usually unwilling to support mitigation initiatives.
- 17) Federal and State agencies
- a) provide technical assistance to local governments in planning and implementing mitigation efforts.
 - b) support mitigation research.
 - c) administer programs that fund local mitigation efforts.
 - d) All of the above.
- 18) To participate in the National Flood Insurance Program (NFIP), communities must
- a) eliminate flood hazards.
 - b) adopt and enforce floodplain management ordinances.
 - c) elevate all homes in the floodplain.
 - d) All of the above.
- 19) When a structure is required to have flood insurance but does not, post-disaster Federal assistance for repair or restoration is refused.
- a) True.
 - b) False.
- 20) The Community Rating System
- a) increases the flood insurance premiums in a community.
 - b) can reduce flood insurance premiums in the community.
 - c) is available in non-NFIP communities.
 - d) All of the above.

- 21) To obtain assistance with comprehensive mitigation planning, a community should contact the State's
- a) Hurricane Program Manager.
 - b) Earthquake Program Manager.
 - c) NFIP Coordinator.
 - d) State Hazard Mitigation Officer (SHMO).
- 22) Section 404 of the Stafford Act authorizes Federal contributions up to 75% of the cost of eligible post-disaster State and local mitigation measures. This program is called
- a) Infrastructure Support.
 - b) Human Services.
 - c) Hazard Mitigation Grant Program.
 - d) Individual and Family Grant Program.
- 23) This Stafford Act program for repairing damaged dwellings requires and funds appropriate actions to mitigate natural hazards.
- a) Infrastructure Recovery.
 - b) Human Services.
 - c) Hazard Mitigation Grant Program.
 - d) Individual and Family Grant Program.
- 24) The basic tools needed to build a community mitigation program are
- a) community commitment, a community planning team, and public input.
 - b) a mitigation specialist and staff.
 - c) a community planner and the local emergency program manager.
- 25) Mitigation planning is more important than other community planning goals.
- a) True
 - b) False